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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/767,093

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EXAMINER

RIVERO, MINERVA

ART UNIT

PAPER NUMBER

2655

DATE MAILED: 09/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/767,093

Applicant(s)

SCHMID ET AL.

Examiner

Minerva Rivero

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/22/2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/22/2001</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to because of spelling error in text of Figure 5, element 508: "Compare previous structure to new rule **structer** to identify first newly added branch". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: spelling error in page 13, line 20: "to build binary structures that **represents** particular rules".

Appropriate correction is required.

Claim Objections

3. Claims 2-5 are objected to because of the following informalities: Spelling error in claim 2, line 4: "one recognition value **of in** the new phrase". Appropriate correction is required. The examiner will examine this claim on the merits based on one of the prepositions above (of or in).

Claims 8-11 are objected to because of the following informalities: spelling error in claim 8, line 2: "where the computer-executable **instruction** include instructions defining". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hutchins (U.S. 4,994,966) in view of Zamora et al. (U.S. 4,887,212).

Regarding claims 1 and 13, Hutchins discloses a computer-readable medium having computer-executable instructions /speech recognition interface for performing the steps of: receiving at least one instruction to add a new phrase and semantic information associated with the new phrase to a grammar and combining the new phrase with at least one other phrase in the grammar to form a single grammar structure (Col. 8, Lines 19-47). Hutchins does not disclose associating the semantic information with a single recognition value in the new phrase by selecting the first possible recognition value in the new phrase that can be associated with the semantic information without introducing semantic ambiguity into the grammar structure.

Zamora et al. (U.S. 4,887,212) disclose associating the semantic information with a single recognition value in the new phrase by selecting the first possible recognition value in the new phrase that can be associated with the semantic information without introducing semantic ambiguity (Col. 8, Lines 20-30 and Lines 44-51, Col. 9, Lines 4-6, Col. 10, Lines 39-42, Col. 17, Lines 13-21), to provide faster processing of the phrase without sacrificing its semantic information (Col. 2, line 46 - Col. 3, line 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hutchins to perform the step of associating the semantic information with a single recognition value by selecting the first possible recognition value in the new phrase that can be associated with the semantic

information without introducing semantic ambiguity as suggested by Zamora et al., the motivation being faster processing of the phrase without sacrificing its semantic information.

Regarding claims 2 and 14, Hutchins discloses the step of combining comprises adding a branch to the grammar structure to represent at least one recognition value of/in the new phrase (Col 8, Lines 19-46).

Regarding claims 3 and 15, Hutchins discloses associating the semantic information with a single recognition value in the new phrase comprises associating the semantic information with the first recognition value of the first branch added to the grammar structure for the new phrase (Col 9, Line 53 - Col 10, Line 11) [*Hutchins describes processing the grammatical paths in parallel*].

Regarding claim 12, Hutchins does not disclose, but Zamora et al. does disclose determining that the semantic information cannot be associated with a single recognition value without introducing semantic ambiguity into the grammar structure; and returning an error message indicating that the semantic information would introduce semantic ambiguity into the grammar structure (Col 9, Lines 2-6, Col 10, Lines 64-65, Col 26, Lines 39-41).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hutchins to perform the step of determining that the semantic information cannot be associated with a single recognition value without introducing semantic ambiguity into the grammar structure; and returning an error message indicating that the semantic information would introduce semantic

ambiguity into the grammar structure as suggested by Zamora et al., the motivation being more efficient processing of the phrase to avoid unnecessary processing of incorrect grammar structure.

6. Claims 4-11 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hutchins (U.S. 4,994,966) in view of Zamora et al. (U.S. 4,887,212) as applied to claims 3 and 15 above, and further in view of Horiguchi et al. (U.S. 6,282,507).

Regarding claims 4 and 16, the combination of Hutchins and Zamora does not explicitly disclose the computer-executable instructions are for performing further steps of: identifying existing semantic information that was present in the grammar structure before the new phrase was added; and shifting existing semantic information within the grammar structure so that the existing semantic information is not on a recognition value found in the new phrase.

Horiguchi et al. teach the computer-executable instructions are for performing further steps of: identifying existing semantic information that was present in the grammar structure before the new phrase was added and shifting existing semantic information within the grammar structure so that the existing semantic information is not on a recognition value found in the new phrase (Fig. 26; Col 27, Line 27 – Col 28, Line 30). Shifting of existing semantic information is pivotal to reduce the semantic ambiguity in the grammar structure and it improves the processing time.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hutchins and Zamora by the shifting of the semantic information as taught by Horiguchi et al., since this results in avoiding the introduction of semantic ambiguity into the grammar structure and reduces the processing time.

Regarding claims 5 and 17, Hutchins discloses (1) shifting existing semantic information comprises placing the semantic information on the first recognition value in each branch that is parallel to the branch added for the new phrase (claim 5) and (2) the semantic information moved by the placement component is found on a transition before the transition that differentiates the current sequence of transitions from all other transitions (claim 17) (Col 9, Line 53 - Col 10, Line 11). *[Hutchins describes processing the grammatical paths in parallel].*

Regarding claims 6 and 7, Hutchins and Zamora do not explicitly disclose the computer-executable instructions/speech recognition interface are for performing further steps of: providing the grammar structure to a speech recognition engine; receiving an indication of a hypothesis word (and confidence score based on probability) recognized by the speech recognition engine in part on the grammar structure; and providing the semantic information associated with the hypothesis word (and confidence score based on probability) to an application.

Horiguchi et al. teach the computer-executable instructions/speech recognition interface are for performing further steps of: providing the grammar structure to a speech recognition engine (Fig. 2, element 222); receiving an indication of a hypothesis

word (and confidence score based on probability) recognized by the speech recognition engine based in part on the grammar structure (Fig. 2, element 224); and providing the semantic information associated with the hypothesis word (and confidence score based on probability) to an application (Fig. 12).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to modify the teachings of Hutchins and Zamora to provide an interface between the grammar structure and the application capable of evaluating the grammar structure and furthermore providing this evaluation or confidence score to an application as suggested by Horiguchi et al., the motivation being a more confident and educated action decision by such receptive application.

Regarding claims 8 – 11, the combination of Hutchins, Zamora, and Horiguchi et al. discloses the claimed computer-executable instruction/speech recognition interface includes instructions defining the application and wherein the computer-executable instructions/speech recognition interface of the application are for performing a step of deciding whether to take an action before complete recognition of a phrase based on semantic information provided to the application with a hypothesis word (See Horiguchi, Fig. 26).

Regarding claim 18, the combination of Hutchins, Zamora et al. and Horiguchi et al. teaches a speech recognition interface wherein the placement component moves the semantic information by associating the semantic information with each transition that extends from the same state as the transition that differentiates the current sequence of transitions from all other transitions (See Horiguchi, Fig. 26; Col 27, Line 27 – Col 28,

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Line 30). Shifting of existing semantic information is pivotal to reduce the semantic ambiguity in the grammar structure and it improves the processing time.

7. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hutchins (U.S. 4,994,966) in view of Zamora et al. (U.S. 4,887,212) as applied to claim 13 above, further in view of Chang et al. (U.S. 6,745,181) and further in view of Horiguchi (U.S. 6,282,507).

Regarding claim 19, the combined teachings of Hutchins and Zamora et al. do not disclose (1) a binary grammar-building component that generates a compiled representation of the grammar structure and (2) a context-free grammar engine that receives the compiled representation of the grammar structure and that provides the grammar structure to a speech recognition engine.

Chang et al. teach a binary grammar-building component that generates a compiled representation of the grammar structure (Col 10, Lines 32-46).

Horiguchi et al. teach a context-free grammar engine that receives a compiled representation of a grammar structure and that provides the grammar structure to a speech recognition engine (Fig. 25, element 2506 and 2524, Column 27, Lines 8-26, Fig. 2).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to modify the combination of Hutchins and Zamora et al. with a binary grammar-building component that generates a compiled representation of the grammar structure as taught by Chang et al. and with a context-free grammar engine as

taught by Horiguchi, since (1) the binary format of the grammar is a much more efficient means of processing large datasets and ambiguous grammar and (2) to enable the processing of the grammar structure.

Regarding claim 20, the obvious combination above does not include, but Horiguchi does disclose the speech recognition interface wherein the context-free grammar engine receives a hypothesis transition from the speech recognition engine before recognition of a complete utterance, identifies semantic information associated with the hypothesis transition, and provides the semantic information to an application (Horiguchi et al., Fig. 2, element 222, Fig. 12).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to modify the combination above with speech recognition interface wherein the context-free grammar engine receives a hypothesis transition from the speech recognition engine before recognition of a complete utterance, identifies semantic information associated with the hypothesis transition, and provides the semantic information to an application as taught by Horiguchi, to enable faster processing of the grammar structure.

8. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marx et al. (U.S. 6,173,266) in view of Schwartz et al. (U.S. 5,621,859).

Regarding claim 21, Marx et al. disclose a computer readable medium having computer-executable instructions representing a speech-enabled application capable of performing the steps of receiving semantic information associated with a hypothesis

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word identified by a speech recognition engine before an entire utterance has been recognized; and identifying a possible action to take based on the semantic information (Abstract, Col 1, Lines 41-54, Col 2, Lines 27-39, Col 11, Lines 32-48), but fails to disclose the step of determining whether to take the action before the entire utterance has been recognized.

Schwartz et al. disclose the step of determining whether to take the action before the entire utterance has been recognized (Abstract, Col 8, Lines 64-67, Col 8-9, Lines 25-32).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Marx et al. by adding the step of determining whether to take the action before the entire utterance has been recognized as taught by Schwartz et al., thus reducing the processing time of the application without adding ambiguity in executing the action.

Regarding claim 22, Marx et al. disclose the further step of receiving a confidence score for the hypothesis and wherein determining whether to take the action comprises balancing the confidence score with a risk of harm associated with incorrectly taking the action (Col 2, Lines 27-39).

Regarding claim 23, Marx et al. does not disclose, however Schwartz et al. discloses determining whether to take the action comprises determining the stability of the semantic information of across the sequence of hypotheses (Abstract, Col 11, Lines 32-54).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Marx et al. by adding determining whether to take the action comprises determining the stability of the semantic information of across the sequence of hypotheses as taught by Schwartz et al., thus ensuring that the application receives the correct information before executing the action.

Regarding claim 24, Marx et al. disclose determining whether to take the action comprises determining not to take the action and instead providing feedback to the user identifying the action was not taken (Col 9, Lines 52-65, Col 10, Lines 34-40).


Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minerva Rivero whose telephone number is (703) 605-4377. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (703) 305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MR 8/26/2004


W. R. YOUNG
PRIMARY EXAMINER